

IN THE CLAIMS:

1. (Previously presented) An implant for treatment of a curved spinal column segment, comprising:

a body including first and second ends along a longitudinal axis spaced by a length sized for attachment to respective ones of first and second vertebrae along surfaces of the first and second vertebrae comprising a concavely curved surface of the spinal column segment, said body being structured with said length further sized so that said body maintains separation of the first and second vertebrae when attached to the first and second vertebrae to distract the spinal column segment along the concavely curved surface toward a straightened configuration while permitting motion of the spinal column segment when attached to the first and second vertebrae.

2. (Previously presented) The implant of claim 1, wherein said body is formable between a first condition and a second condition, said body being formed to said second condition for attachment to the first and second vertebrae and reforming toward said first condition from said second condition to continuously distract the first and second vertebrae when attached thereto.

3. (Original) The implant of claim 2, wherein said body is formable by compressing said body between said first and second ends.

4. (Original) The implant of claim 2, wherein said body comprises a shape memory material, said body being formable by changing a phase of said shape memory material.

5. (Original) The implant of claim 1, wherein said first end of said body includes a first hole for receiving a first bone anchor engageable to the first vertebra and said second end includes a second hole for receiving a second bone anchor engageable to the second vertebra.

6. (Withdrawn) The implant of claim 5, wherein said body includes at least one reinforcement member embedded therein adjacent at least one of said first and second openings.

7. (Withdrawn) The implant of claim 6, wherein said at least one reinforcement member extends at least partially around said adjacent opening.

8. (Previously presented) The implant of claim 1, wherein said body includes a stiffness which varies along said length of said body between said first and second ends.

9. (Original) The implant of claim 8, wherein said body is compressible from a first condition to a second condition and is resilient to reform from said second condition to said first condition to continuously distract the spinal column segment when attached thereto.

10. (Withdrawn) The implant of claim 9, wherein said body includes a number of reinforcing members embedded therein.

11. (Withdrawn) The implant of claim 1, wherein said body includes a chamber along a mid-portion thereof, said chamber including a fluid therein.

12. (Withdrawn) The implant of claim 11, further comprising a secondary device in said chamber adapted to imbibe said fluid in said chamber in response to compressive and tensile forces exerted on said body upon motion of the spinal column segment.

13. (Original) The implant of claim 1, wherein said body includes a lower surface directed towards the spinal column segment when said body is attached thereto, said body further including an upper surface opposite said lower surface.

14. (Original) The implant of claim 13, wherein said body includes an enlarged mid-portion between said upper and lower surfaces.

15. (Original) The implant of claim 14, wherein said enlarged mid-portion includes a pyramidal shape between said first and second ends of said body.

16. (Withdrawn) The implant of claim 14, wherein said enlarged mid-portion includes a bulbous shape between said first and second ends of said body.

17. (Withdrawn) The implant of claim 13, wherein said lower surface includes a U-shape adapted to extend at least partially around an anterior portion of the first and second vertebrae.

18. (Previously presented) The implant of claim 1, wherein said length is sized for attachment to adjacent first and second vertebrae of the spinal column segment.

19. (Previously presented) The implant of claim 1, wherein said body further includes a medial axis orthogonally oriented to said longitudinal axis between said first and second ends, and said body tapers in width from said medial axis toward each of said first and second ends.

20. (Original) The implant of claim 19, wherein said body includes a first portion on a first side of said medial axis and a second portion on a second side of said medial axis, said first and second portions each having a generally triangular shape.

21. (Original) The implant of claim 19, wherein said body includes a height between a lower surface and an upper surface thereof, said height tapering from said medial axis toward each of said first and second ends.

22. (Withdrawn) The implant of claim 1, wherein said body includes a first portion extending between said first and second ends, said first portion being offset laterally from said longitudinal axis to form a gap between said first and second ends.

23. (Withdrawn) The implant of claim 22, wherein said first portion of said body includes a shape selected from the group consisting of: semi-circular, semi-oval, semi-rectangular, and triangular.

24. (Withdrawn) The implant of claim 22, wherein said body includes a second portion extending between said first and second ends offset laterally from said longitudinal axis in a direction opposite said first portion of said body, said first and second portions forming an opening through said body between said first and second ends.

25. (Withdrawn) The implant of claim 24, wherein said first and second portions of said body form a shape between said first and second ends selected from the group consisting of: circular, oval, diamond, and chain-shaped.

26. (Withdrawn) The implant of claim 24, wherein said first and second portions of said body are hingedly coupled together adjacent at least one of said first and second ends.

27. (Previously presented) An implant for distracting first and second vertebrae of a spinal column segment, comprising:

a body with a length along a longitudinal axis extending between opposite first and second ends when said body is in a first condition, said body including a second condition wherein said body is longitudinally compressed between said opposite ends with said compressed length sized for implanting said body between the first and second vertebrae, said body including means for reforming from said second condition toward said length of said first condition when implanted and released from said compression to exert a distractive force between the first and second vertebrae and permit relative motion between the first and second vertebrae.

28. (Original) The implant of claim 27, wherein said body includes a stiffness which varies along said length.

29. (Original) The implant of claim 28, wherein said body includes an enlarged mid-portion and said stiffness increases toward a medial axis of said body.

30. (Withdrawn) The implant of claim 29, wherein said enlarged mid-portion includes a bulbous shape.

31. (Original) The implant of claim 29, wherein said enlarged mid-portion includes a pyramidal shape.

32. (Original) The implant of claim 29, wherein said body includes a lower surface positionable adjacent the first and second vertebrae and a base portion along said lower surface having a substantially constant thickness along said body, said body further including an upper portion extending from said base portion and including said enlarged mid-portion, said upper portion including a thickness between said base portion and an upper surface of said body, said thickness varying along a length of said upper portion of said body.

33. (Withdrawn) The implant of claim 32, wherein said lower surface defines a U-shape transverse to said longitudinal axis.

34. (Original) The implant of claim 32, wherein said thickness tapers from a medial portion of said body toward opposite ends of said body.

35. (Original) The implant of claim 27, wherein said body includes a medial axis orthogonal to said longitudinal axis, said body including a first portion on one side of said medial axis and a second portion on the other side of said medial axis, each of said first and second portions forming a generally triangular shape with a base of each of said generally triangular shapes positioned adjacent one another along said medial axis.

36. (Original) The implant of claim 35, wherein each of said first and second portions include an anchor hole opposite said base of said generally triangular shape thereof.

37. (Previously presented) The implant of claim 27, wherein said means for reforming includes a resilient material comprising said body.

38. (Original) The implant of claim 27, wherein said body comprises a shape memory material and said means for reforming includes changing a phase of said shape memory material.

39. (Withdrawn) The implant of claim 27, wherein said body includes a first portion extending between said opposite first and second ends, said first portion being offset laterally from said longitudinal axis to form a gap between said opposite first and second ends.

Claim 40 (Cancelled)

41. (Withdrawn) The implant of claim 39, wherein said first portion of said body includes a shape selected from the group consisting of: semi-circular, semi-oval, semi-rectangular, and triangular.

42. (Withdrawn) The implant of claim 39, wherein said body includes a second portion extending between said first and second ends, said second portion being offset laterally from said longitudinal axis in a direction opposite said first portion, said first and second portions forming an opening through said body between said first and second ends.

43. (Withdrawn) The implant of claim 42, wherein said first and second portions of said body form a shape between said first and second ends selected from the group consisting of: circular, oval, diamond, and chain-shaped.

44. (Withdrawn) The implant of claim 42, wherein said first and second portions of said body are hingedly coupled together adjacent at least one of said first and second ends.

45. (Previously presented) A system for treatment of a curved spinal column segment, comprising:

a first anchor engageable to a first vertebra;

a second anchor engageable to a second vertebra; and

a body positionable along surfaces of the first and second vertebrae comprising a concavely curved surface of the spinal column segment and including a length between opposite first and second ends sized for attachment to said first and second anchors, said body being structured with said opposite ends biased away from one another against said first and second anchors to distract the spinal column segment along the concavely curved surface and between the first and second anchors toward a straightened configuration while permitting motion of the spinal column segment when attached to the first and second vertebrae.

46. (Previously presented) The system of claim 45, wherein said body is attachable to respective ones of the first and second vertebrae of the spinal column segment with respective ones of the first and second anchors, said body being formable from a first condition to a second condition, wherein said body is formed to said second condition for attachment to the first and second vertebrae and reforms toward said first condition from said second condition to continuously distract the first and second vertebrae.

47. (Original) The system of claim 46, wherein said body is formable by compressing said body between said first and second ends.

48. (Original) The system of claim 46, wherein said body comprises a shape memory material and said body is formable to said second condition by changing a phase of said shape memory material to move said first and second ends toward one another.

49. (Withdrawn) The system of claim 48, wherein said body includes a first portion extending between said first and second ends, said first portion being offset laterally from a longitudinal axis of said body to form a gap between said first and second ends.

50. (Withdrawn) The system of claim 46, wherein said body includes a chamber, a fluid imbibing device in said chamber, and a fluid in said chamber, wherein said fluid imbibing device imbibes said fluid over time to expand said body from said first condition to said second condition against said first and second anchors.

Claims 51-80 (Cancelled)

81. (Previously presented) An implant for treatment of a curved spinal column segment, comprising:

a body including first and second ends along a longitudinal axis, said first and second ends attachable to respective ones of first and second vertebrae along surfaces of the first and second vertebrae comprising a concavely curved surface of the spinal column segment, wherein said body further includes a medial axis orthogonally oriented to said longitudinal axis between said first and second ends, said body tapering in width from said medial axis toward each of said first and second ends and said body further includes a height between a lower surface and an upper surface thereof with said height tapering from said medial axis toward each of said first and second ends, whereby said body is structured to distract the spinal column segment along the concavely curved surface toward a straightened configuration while permitting motion of the spinal column segment when attached to the first and second vertebrae.

82. (Previously presented) The implant of claim 81, wherein said body includes a length along said longitudinal axis sized for attachment to adjacent first and second vertebrae of the spinal column segment.

83. (Previously presented) The implant of claim 81, wherein said body includes a first portion on a first side of said medial axis and a second portion on a second side of said medial axis, said first and second portions each having a generally triangular shape.

84. (Previously presented) The implant of claim 81, wherein said body is formable between a first condition and a second condition, said body being formed to said second condition for attachment to the first and second vertebrae and reforming toward said first condition from said second condition to continuously distract the first and second vertebrae when attached thereto.

85. (Previously presented) The implant of claim 84, wherein said body is formable by compressing said body between said first and second ends.

86. (Previously presented) The implant of claim 84, wherein said body comprises a shape memory material, said body being formable by changing a phase of said shape memory material.

87. (Previously presented) The implant of claim 81, wherein said first end of said body includes a first hole for receiving a first bone anchor engageable to the first vertebra and said second end includes a second hole for receiving a second bone anchor engageable to the second vertebra.

88. (Previously presented) The implant of claim 81, wherein said body includes a stiffness which varies along a length of said body between said first and second ends.

89. (Previously presented) The implant of claim 88, wherein said body is compressible from a first condition to a second condition and is resilient to reform from said second condition to said first condition to continuously distract the spinal column segment when attached thereto.

90. (Currently amended) An implant for distracting first and second vertebrae of a spinal column segment, comprising:

a body with a length along a longitudinal axis, said body including a first condition and a second condition, said body being implantable between the first and second vertebrae in said second condition with said length extending between the first and second vertebrae, said body including means for reforming from said second condition to said first condition when implanted to exert a distractive force between the first and second vertebrae and permit relative motion between the first and second vertebrae, wherein said body includes an enlarged mid-portion and a stiffness that varies along said length and increases toward a medial axis of said body and said enlarged mid-portion includes a pyramidal shape.

91. (Currently amended) The implant of claim 90, wherein said enlarged mid-portion thickness tapers from a medial portion of said body toward opposite ends of said body.

92. (Previously presented) The implant of claim 90, wherein said body includes opposite ends attachable to the first and second vertebrae, each of the said opposite ends including an anchor hole.

93. (Previously presented) The implant of claim 90, wherein said body is formed to said second condition by compressing said body along said longitudinal axis and said means for reforming includes a resilient material comprising said body.

94. (Previously presented) The implant of claim 90, wherein said body comprises a shape memory material and said means for reforming includes changing a phase of said shape memory material.

95. (Previously presented) An implant for distracting first and second vertebrae of a spinal column segment, comprising:

a body with a length along a longitudinal axis, said body including a first condition and a second condition, said body being implantable between the first and second vertebrae in said second condition with said length extending between the first and second vertebrae, said body including means for reforming from said second condition to said first condition when implanted to exert a distractive force between the first and second vertebrae and permit relative motion between the first and second vertebrae, wherein said body includes an enlarged mid-portion and a stiffness that varies along said length and increases toward a medial axis of said body, wherein said body further includes a lower surface positionable adjacent the first and second vertebrae and a base portion along said lower surface having a substantially constant thickness along said body, said body further including an upper portion extending from said base portion and including said enlarged mid-portion, said upper portion including a thickness between said base

portion and an upper surface of said body, said thickness varying along a length of said upper portion of said body.

96. (Previously presented) The implant of claim 95, wherein said thickness tapers from a medial portion of said body toward opposite ends of said body.

97. (Previously presented) The implant of claim 95, wherein said enlarged mid-portion includes a pyramidal shape.

98. (Previously presented) The implant of claim 95, wherein said body includes a longitudinal axis along said length and said medial axis is orthogonal to said longitudinal axis, said body including a first portion on one side of said medial axis and a second portion on the other side of said medial axis, each of said first and second portions forming a generally triangular shape with a base of each of said generally triangular shapes positioned adjacent one another along said medial axis.

99. (Previously presented) The implant of claim 98, wherein each of said first and second portions include an anchor hole opposite said base of said generally triangular shape thereof.

100. (Previously presented) The implant of claim 95, wherein said body is formed to said second condition by compressing said body along said longitudinal axis and said means for reforming includes a resilient material comprising said body.

101. (Previously presented) The implant of claim 95, wherein said body comprises a shape memory material and said means for reforming includes changing a phase of said shape memory material.

102. (New) The implant of claim 81, wherein the first and second ends are attachable to lateral portions of the first and the second vertebrae.

103. (New) The implant of claim 81, wherein the first and second ends are attachable to anterior portions of the first and the second vertebrae.

104. (New) The implant of claim 90, wherein the body is implantable along a lateral surface of the first and the second vertebra.

105. (New) The implant of claim 90, wherein the body is implantable along an anterior surface of the first and the second vertebra.